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Canada

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**D205-634-041**  
**Job Sheet 182632**



Part No: D205-634-041

Job Qty: 1 ea

Part Name: Replacement Skidtube with Standard Wearplates Fits LH or RH



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 8/29/18

Job Tracking No:

Due Date: 9/21/18

Created By: Marie Lajeunesse

Type: SOLD

Description:

Note: DWG D2580 REV H SHEETS 1,2,3,8 IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30 KJ IPP Rev P 10.02.19 per PAR09-043 EC verified by:DD IPP Rev. O 06.02.28 Added paperwork EC IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM IPP Rev:Q 10.12.01 as per chg003 DD ver:EC IPP REV:R 12.01.23 AS PER ECN11-684 VERF:EC IPP REV:S 17.12.08 REMOVE GASKET AS PER INTUITIVE INFO DD VERF:JFS

Ship Via:

### Bill of Materials

### Job Routing

| Op No | Operation          | Qty   | Start Date | Due Date | Standard  |         | Workcenter/Supplier   |           | Sign-off                 |
|-------|--------------------|-------|------------|----------|-----------|---------|-----------------------|-----------|--------------------------|
|       |                    |       |            |          | Setup hrs | Run Hrs | Workcenter / Supplier | Lead Time |                          |
| 90    | Start up Operation | 1 Ea  | 9/21/18    | 9/21/18  | 0.00      | 0.00    | Start Up Skidtubes    |           | DD                       |
| 110   | CNC Bend Skidtubes | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 0.65    | CNC Bend Skidtube     |           | MAG DD                   |
| 120   | Skidtubes          | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 2.89    | Skidtubes-2           |           | MAG                      |
| 130   | QC                 | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 0.00    | QC5                   |           | BE                       |
| 140   | Skidtubes          | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 2.89    | Skidtubes-2           |           | BE, DAS, MAG, DD         |
| 150   | QC                 | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 0.00    | QC10                  |           | BE, 38, DAS              |
| 160   | QC                 | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 0.00    | QC5                   |           | 9-89, 38                 |
| 170   | HandFinish         | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 1.31    | HandFinish1           |           | DR, 18/09/24             |
| 180   | Powdercoat         | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 0.34    | Powdercoat1           |           | BE, 18-9-25              |
| 190   | QC                 | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 0.00    | QC3                   |           | M, 18-9-26               |
| 200   | HandFinish         | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 1.31    | HandFinish4           |           | M, 18-9-26               |
| 210   | QC                 | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 0.00    | QC5                   |           | DAS, 69, OCT 6, 2018, 68 |
| 220   | Packaging          | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 0.00    | Packaging3-1          |           | 9-89, 38                 |
| 225   | DC                 | 1 pcs | 9/21/18    | 9/21/18  | 0.00      | 0.00    | DC                    |           | 9-89                     |
| 230   | QC21-FG            | 1 Ea  | 9/21/18    | 9/21/18  | 0.00      | 0.00    | QC21                  |           | M, 18-10-12              |

Part Op 110 - 1-Bend as per program D2580.C on CNC Bender and Folio 16 2-Cut tubes as per Dwg. D2580 3- scribe batch# in Descriptions: aft end of tube

120 - 1- Deburr ends and remove bending marks 2- Prepare tube for welding as per QSI 004

140 - 1-Weld step D2576 as per Dwg. D2580 and QSI 004 2-Grind welds on step as per Dwg D2580 3- Insert D4202-1 spacer, swage as per QSI002 and trim/ grind flush per QSI002 and dwg. Hold x-bolt with DT9701 Use tube expander 1/2 x17G to start expansion and finish with 1/2 x 18G to achieve dwg dimension. 4-Drill holes for wearplates using DT 8217 & DT8937, 7.40" from most fwd saddle holes (ref only) Open holes to 19/64", adjust stopper not to hit web. Deburr 5-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Deburr 6-Drill pilot holes for Tow ring using DT8091, open to .640" and Deburr

170 - Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd cap out of solution.

180 - START TIME: 8:25 OVEN TEMPERATURE: 300 FINISH TIME: 8:05

200 - 1-Install inserts & wearplates as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates A/R Sikaflex-291 M130034 Sikaflex expire date: 19103 2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580 3-Inspect for foreign object per QSI 024 4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive A/R Sikaflex-291 M130034 Sikaflex expire date: 19103 5-Wing Walk as per Dwg D2580 and QSI 005 4.4 Batch: M130034

210 - Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024



DQA: \_\_\_\_\_ Date: \_\_\_\_\_

## WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

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| <p>Work Order: _____</p> <p>Part No. _____</p> <p>NCR No. _____</p> <p>Date : _____ Step _____</p> <p style="text-align: center;"><b>Description Work Order</b></p> <div style="height: 200px; border: 1px solid black;"></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <div style="text-align: center;"> <br/> <b>Container No: S110612</b><br/> <b>Part: D205-634-041</b><br/> <b>Job No: 182632</b><br/> <b>Serial No/Batch: S110612</b><br/> Revision: H<br/> Inspector: _____<br/> Exp Date: _____<br/> Instructions: TC STC SH96-88 Issue Ref: FAS-STC SR00563NY 08/08/11, EASA ST </div> | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Engineering</td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td style="text-align: center;">Quality</td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td style="text-align: center;">Other</td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td colspan="2" style="text-align: center;">MRB (QS1042) Approval</td> </tr> <tr> <td colspan="2" style="text-align: center;">Completed By</td> </tr> <tr> <td colspan="2" style="text-align: center;">Lead hand / Supervisor Approval Verification</td> </tr> <tr> <td colspan="2" style="text-align: center;">QC / QA Coordinator Approval</td> </tr> </table> | Engineering     |        | Quality  |         | Other    |              | MRB (QS1042) Approval |               | Completed By |        | Lead hand / Supervisor Approval Verification |          | QC / QA Coordinator Approval |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Engineering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Quality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Other                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| MRB (QS1042) Approval                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Completed By                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Lead hand / Supervisor Approval Verification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| QC / QA Coordinator Approval                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| <p style="text-align: center;"><b>Root Cause</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Environment</td> <td style="width: 33%;">No Re-verification</td> <td style="width: 33%;">Pressure/Forced</td> </tr> <tr> <td>Design</td> <td>Operator</td> <td>Bending</td> </tr> <tr> <td>Doc/Data</td> <td>Offset/Setup</td> <td>Centre Not Concentric</td> </tr> <tr> <td>Equip/Tooling</td> <td>Supplier</td> <td>Cracks</td> </tr> <tr> <td>Handling/Pre</td> <td>Training</td> <td>Crimp/Kink/Ripple/Wave</td> </tr> <tr> <td>Material</td> <td>Use for Testing</td> <td>Cuffs</td> </tr> <tr> <td>Internal Transport</td> <td>Poor Information</td> <td>Crushing</td> </tr> <tr> <td>Tribal Knowledge</td> <td>Rushing</td> <td>Heat Treat</td> </tr> <tr> <td>LOA</td> <td>Product Improvement</td> <td>Wave/Twist in Tube</td> </tr> <tr> <td>Substation</td> <td>Process Improvement</td> <td>Marks/Chatter</td> </tr> <tr> <td>Past Expiry Date</td> <td>Manufacturing Process</td> <td></td> </tr> <tr> <td>Misidentified</td> <td>Past Due</td> <td></td> </tr> </table> | Environment                                                                                                                                                                                                                                                                                                             | No Re-verification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Pressure/Forced | Design | Operator | Bending | Doc/Data | Offset/Setup | Centre Not Concentric | Equip/Tooling | Supplier     | Cracks | Handling/Pre                                 | Training | Crimp/Kink/Ripple/Wave       | Material | Use for Testing | Cuffs | Internal Transport | Poor Information | Crushing | Tribal Knowledge | Rushing | Heat Treat | LOA | Product Improvement | Wave/Twist in Tube | Substation | Process Improvement | Marks/Chatter | Past Expiry Date | Manufacturing Process |  | Misidentified | Past Due |  | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Temperature/Cure</td> <td style="width: 33%;">Power Loss/Surge</td> <td style="width: 33%;">Positioned Wrong</td> </tr> <tr> <td>Set-up</td> <td>Folio/Program</td> <td>Outside Dimensions</td> </tr> <tr> <td>BOM/Route</td> <td>Grain</td> <td>Over/Under tolerance</td> </tr> <tr> <td>Broken/Damage/Defect</td> <td>Weld</td> <td>Part Incorrect</td> </tr> <tr> <td>Inspection Incomplete/Unqualified</td> <td>Wrong Stock Pulled</td> <td>Part Lost/Missing</td> </tr> <tr> <td>Contamination</td> <td>Out of Sequence</td> <td>Part Moved</td> </tr> <tr> <td>Countersink</td> <td>Off-set</td> <td>Drawing</td> </tr> <tr> <td>Cut Too Short</td> <td>Mislabeled</td> <td>Finish</td> </tr> <tr> <td>Instructions Incomplete/Unclear</td> <td>Fit/Function</td> <td>Misread</td> </tr> <tr> <td>Drill Holes</td> <td>Misaligned/off center</td> <td>Turning Sequence</td> </tr> </table> | Temperature/Cure | Power Loss/Surge | Positioned Wrong | Set-up | Folio/Program | Outside Dimensions | BOM/Route | Grain | Over/Under tolerance | Broken/Damage/Defect | Weld | Part Incorrect | Inspection Incomplete/Unqualified | Wrong Stock Pulled | Part Lost/Missing | Contamination | Out of Sequence | Part Moved | Countersink | Off-set | Drawing | Cut Too Short | Mislabeled | Finish | Instructions Incomplete/Unclear | Fit/Function | Misread | Drill Holes | Misaligned/off center | Turning Sequence | <p>OTHER : _____</p> |
| Environment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | No Re-verification                                                                                                                                                                                                                                                                                                      | Pressure/Forced                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Operator                                                                                                                                                                                                                                                                                                                | Bending                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Doc/Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Offset/Setup                                                                                                                                                                                                                                                                                                            | Centre Not Concentric                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Equip/Tooling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Supplier                                                                                                                                                                                                                                                                                                                | Cracks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Handling/Pre                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Training                                                                                                                                                                                                                                                                                                                | Crimp/Kink/Ripple/Wave                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Use for Testing                                                                                                                                                                                                                                                                                                         | Cuffs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Internal Transport                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Poor Information                                                                                                                                                                                                                                                                                                        | Crushing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Tribal Knowledge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Rushing                                                                                                                                                                                                                                                                                                                 | Heat Treat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| LOA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Product Improvement                                                                                                                                                                                                                                                                                                     | Wave/Twist in Tube                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Substation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Process Improvement                                                                                                                                                                                                                                                                                                     | Marks/Chatter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Past Expiry Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Manufacturing Process                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Misidentified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Past Due                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Temperature/Cure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Power Loss/Surge                                                                                                                                                                                                                                                                                                        | Positioned Wrong                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Set-up                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Folio/Program                                                                                                                                                                                                                                                                                                           | Outside Dimensions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| BOM/Route                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Grain                                                                                                                                                                                                                                                                                                                   | Over/Under tolerance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Broken/Damage/Defect                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Weld                                                                                                                                                                                                                                                                                                                    | Part Incorrect                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Inspection Incomplete/Unqualified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Wrong Stock Pulled                                                                                                                                                                                                                                                                                                      | Part Lost/Missing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Contamination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Out of Sequence                                                                                                                                                                                                                                                                                                         | Part Moved                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Countersink                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Off-set                                                                                                                                                                                                                                                                                                                 | Drawing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Cut Too Short                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Mislabeled                                                                                                                                                                                                                                                                                                              | Finish                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Instructions Incomplete/Unclear                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Fit/Function                                                                                                                                                                                                                                                                                                            | Misread                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |
| Drill Holes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Misaligned/off center                                                                                                                                                                                                                                                                                                   | Turning Sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |        |          |         |          |              |                       |               |              |        |                                              |          |                              |          |                 |       |                    |                  |          |                  |         |            |     |                     |                    |            |                     |               |                  |                       |  |               |          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |                  |        |               |                    |           |       |                      |                      |      |                |                                   |                    |                   |               |                 |            |             |         |         |               |            |        |                                 |              |         |             |                       |                  |                      |



| Job BOM       |                         |               |                       |           | 005672  |
|---------------|-------------------------|---------------|-----------------------|-----------|---------|
| Part / Item   | Component Name          | Quantity      | Operation             | Container |         |
| D2580-1       | 205 Bent Tube           | 1 Ea (1 ea)   | 90-Start up Operation |           | 5108455 |
| D2576-3       | Step (Machining Detail) | 1 Ea (1 ea)   | 140-Skidtubes         |           | 5089827 |
| D4202-1       | Spacer                  | 20 Ea (20 ea) | 140-Skidtubes         |           | 5099431 |
| ALS7-1032-130 | Rivnut                  | 50 Ea (50 ea) | 200-HandFinish        |           | 5045669 |
| AN3-5A        | Bolt                    | 2 Ea (2 ea)   | 200-HandFinish        |           | 5095480 |
| AN3C4A        | Bolt                    | 50 Ea (50 ea) | 200-HandFinish        |           | 5095223 |
| D2594-1       | Plug                    | 16 Ea (16 ea) | 200-HandFinish        |           | 5684102 |
| D2594-3       | O-Ring MS28775-011      | 16 Ea (16 ea) | 200-HandFinish        |           | 5066019 |
| D2855         | Cap                     | 1 Ea (1 ea)   | 200-HandFinish        |           | 5080626 |
| D3564-11      | Wearplate Aft           | 1 Ea (1 ea)   | 200-HandFinish        |           | 5081692 |
| D3564-13      | Wearpad Fwd             | 1 Ea (1 ea)   | 200-HandFinish        |           | 5089612 |
| D3564-5       | Wearplate Center        | 1 Ea (1 ea)   | 200-HandFinish        |           | 5107312 |
| D3564-9       | Wearplate Fwd           | 1 Ea (1 ea)   | 200-HandFinish        |           | ✓       |
| NAS1149C0332R | Washer                  | 50 Ea (50 ea) | 200-HandFinish        |           | 5071663 |
| NAS1149D0332J | Washer                  | 2 Ea (2 ea)   | 200-HandFinish        |           | 5100407 |

| Job Allocations       |                |          |           |           |
|-----------------------|----------------|----------|-----------|-----------|
| Operation             | Component Part | Required | Inventory | Allocated |
| 90-Start up Operation | D2580-1        | 1        | 0         | 0         |
| 140-Skidtubes         | D2576-3        | 1        | 54        | 0         |
|                       | D4202-1        | 20       | 391       | 0         |
| 200-HandFinish        | ALS7-1032-130  | 50       | 1,448     | 0         |
|                       | AN3-5A         | 2        | 399       | 0         |
|                       | AN3C4A         | 50       | 2,578     | 0         |
|                       | D2594-1        | 16       | 109       | 0         |
|                       | D2594-3        | 16       | 212       | 0         |
|                       | D2855          | 1        | 56        | 0         |
|                       | D3564-11       | 1        | 20        | 0         |
|                       | D3564-13       | 1        | 16        | 0         |
|                       | D3564-5        | 1        | 9         | 0         |
|                       | D3564-9        | 1        | 8         | 0         |
|                       | NAS1149C0332R  | 50       | 6,180     | 0         |
|                       | NAS1149D0332J  | 2        | 2,695     | 0         |

### Part Specifications

Specifications could not be found.



DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                |                                                                                                                                                                                    |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                       |                                              |  |
|--------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|--|-----------------------|----------------------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |                                                | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |                                                            | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |                                               |  |                       |                                              |  |
| Date :                                                       |                                                | Step #:                                                                                                                                                                            |                                                            | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  | MRB (QSI042) Approval |                                              |  |
| Description Work Order Deviation                             |                                                |                                                                                                                                                                                    |                                                            | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                               |  |                       | Completed By                                 |  |
|                                                              |                                                |                                                                                                                                                                                    |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                       | Lead hand / Supervisor Approval Verification |  |
|                                                              |                                                |                                                                                                                                                                                    |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                       |                                              |  |
|                                                              |                                                |                                                                                                                                                                                    |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                       |                                              |  |
| Root Cause                                                   |                                                | FAULT CATEGORY                                                                                                                                                                     |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                       |                                              |  |
| Environment <input type="checkbox"/>                         | No Re-verification <input type="checkbox"/>    | Pressure/Forced <input type="checkbox"/>                                                                                                                                           | Temperature/Cure <input type="checkbox"/>                  | Power Loss/Surge <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Positioned Wrong <input type="checkbox"/>     |  |                       |                                              |  |
| Design <input type="checkbox"/>                              | Operator <input type="checkbox"/>              | Bending <input type="checkbox"/>                                                                                                                                                   | Set-up <input type="checkbox"/>                            | Folio/Program <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Outside Dimensions <input type="checkbox"/>   |  |                       |                                              |  |
| Doc/Data <input type="checkbox"/>                            | Offset/Setup <input type="checkbox"/>          | Centre Not Concentric <input type="checkbox"/>                                                                                                                                     | BOM/Route <input type="checkbox"/>                         | Grain <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Over/Under tolerance <input type="checkbox"/> |  |                       |                                              |  |
| Equip/Tooling <input type="checkbox"/>                       | Supplier <input type="checkbox"/>              | Cracks <input type="checkbox"/>                                                                                                                                                    | Broken/Damage/Defect <input type="checkbox"/>              | Weld <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Part Incorrect <input type="checkbox"/>       |  |                       |                                              |  |
| Handling/Pre <input type="checkbox"/>                        | Training <input type="checkbox"/>              | Crimp/Kink/Ripple/Wave <input type="checkbox"/>                                                                                                                                    | Inspection Incomplete/Unqualified <input type="checkbox"/> | Wrong Stock Pulled <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Part Lost/Missing <input type="checkbox"/>    |  |                       |                                              |  |
| Material <input type="checkbox"/>                            | Use for Testing <input type="checkbox"/>       | Cuffs <input type="checkbox"/>                                                                                                                                                     | Contamination <input type="checkbox"/>                     | Out of Sequence <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Part Moved <input type="checkbox"/>           |  |                       |                                              |  |
| Internal Transport <input type="checkbox"/>                  | Poor Information <input type="checkbox"/>      | Crushing <input type="checkbox"/>                                                                                                                                                  | Countersink <input type="checkbox"/>                       | Off-set <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Drawing <input type="checkbox"/>              |  |                       |                                              |  |
| Tribal Knowledge <input type="checkbox"/>                    | Rushing <input type="checkbox"/>               | Heat Treat <input type="checkbox"/>                                                                                                                                                | Cut Too Short <input type="checkbox"/>                     | Mislabeled <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Finish <input type="checkbox"/>               |  |                       |                                              |  |
| LOA <input type="checkbox"/>                                 | Product Improvement <input type="checkbox"/>   | Wave/Twist in Tube <input type="checkbox"/>                                                                                                                                        | Instructions Incomplete/Unclear <input type="checkbox"/>   | Fit/Function <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Misread <input type="checkbox"/>              |  |                       |                                              |  |
| Substation <input type="checkbox"/>                          | Process Improvement <input type="checkbox"/>   | Marks/Chatter <input type="checkbox"/>                                                                                                                                             | Drill Holes <input type="checkbox"/>                       | Misaligned/off center <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Turning Sequence <input type="checkbox"/>     |  |                       |                                              |  |
| Past Expiry Date <input type="checkbox"/>                    | Manufacturing Process <input type="checkbox"/> | OTHER :                                                                                                                                                                            |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                       |                                              |  |
| Misidentified <input type="checkbox"/>                       | Past Due <input type="checkbox"/>              |                                                                                                                                                                                    |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                       |                                              |  |

| ITEM | QTY<br>-041 | QTY<br>-045 | QTY<br>-047 | QTY<br>-049 | PART NUMBER                                                               | DESCRIPTION         |
|------|-------------|-------------|-------------|-------------|---------------------------------------------------------------------------|---------------------|
| 1    | X           |             |             |             | D2580-041                                                                 | SKIDTUBE ASSEMBLY   |
| 2    |             | X           |             |             | D2580-045                                                                 | SKIDTUBE ASSEMBLY   |
| 3    |             |             | X           |             | D2580-047                                                                 | SKIDTUBE ASSEMBLY   |
| 4    |             |             |             | X           | D2580-049                                                                 | SKIDTUBE ASSEMBLY   |
| 20   | 1           | 1           | 1           | 1           | D2500-1-190                                                               | EXTRUSION           |
| 21   |             |             | 16          | 16          | D2570                                                                     | BUSHING             |
| 22   | 1           | 1           | 1           | 1           | D2578-3                                                                   | STEP                |
| 23   |             | 4           |             |             | D2579                                                                     | SPACER              |
| 24   | 16          | 16          | 8           | 8           | D2694-1                                                                   | PLUG                |
| 25   | 16          | 16          | 8           | 8           | D2594-3                                                                   | O-RING              |
| 26   | 1           | 1           | 1           | 1           | D2596                                                                     | 205 WEB             |
| 27   | 1           | 1           | 1           | 1           | D2855                                                                     | AFT CAP             |
| 28   | 1           | 1           |             |             | D3584-5                                                                   | WEARSHOE            |
| 29   | 1           | 1           |             |             | D3584-9                                                                   | WEARSHOE            |
| 30   | 1           | 1           |             |             | D3584-11                                                                  | WEARSHOE            |
| 31   | 1           | 1           |             |             | D3584-13                                                                  | WEARSHOE            |
| 32   | 20          | 20          | 24          | 24          | D4202-1                                                                   | SPACER              |
| 33   |             |             | 1           |             | D4408-041                                                                 | WEARPLATE ASSEMBLY  |
| 34   |             |             | 1           |             | D4408-043                                                                 | WEARPLATE ASSEMBLY  |
| 35   |             |             |             | 1           | D5061-1                                                                   | FWD WEARPLATE       |
| 36   |             |             |             | 1           | D5061-3                                                                   | AFT WEARPLATE       |
| 50   | 50          | 50          |             |             | ALST-1032-130<br>or AKS7-1032-130<br>or AKS4-1032-130<br>or AELS-1032-130 | INSERT              |
| 51   | 50          | 50          |             |             | AN3C4A                                                                    | BOLT                |
| 52   | 2           | 2           | 2           | 2           | AN3-5A                                                                    | BOLT                |
| 53   |             |             | 8           | 8           | AN4-45A                                                                   | BOLT                |
| 54   | 50          | 50          |             |             | NAS1149C0332R                                                             | WASHER (AN960C10L)  |
| 55   | 2           | 2           | 2           | 2           | NAS1149D0332J                                                             | WASHER (AN960JD10L) |
| 56   |             |             | 8           | 8           | MS21042-4                                                                 | NUT (OR MS21042L4)  |

# **GENERAL NOTES:**

- MATERIAL: N/A
- FINISH: CHEMICAL CONVERSION PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB  
POWDER COAT (-041/-047/-049) GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3  
POWDER COAT (-045) GREEN SANDTEX (REF 4.3.5.8) PER DART QSI 005 4.3  
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4.
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: NONE
- WEIGHT: D2580-041 = 33.7 lbs  
D2580-045 = 33.7 lbs  
D2580-047 = 45.1 lbs  
D2580-049 = 32.0 lbs
- WELDING PER DART QSI 004.
- INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- USE DART DRILL TEMPLATE DT8217 & DT8937 ONLY FOR D2580-041/-045 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALST-1032-130 PER SECTIONS B-B AND F-F (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND NAS1149C0332R WASHERS WITH SIKAFLEX-241-291.
- INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES FOR D2580-041/-045 AND 8 PLACES FOR D2580-047/-049)
- IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION

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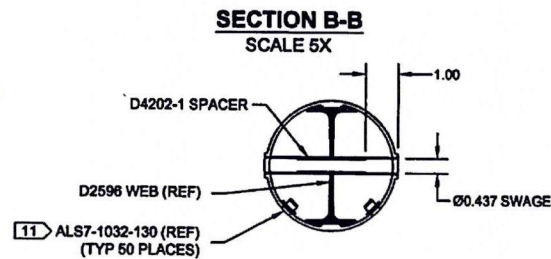
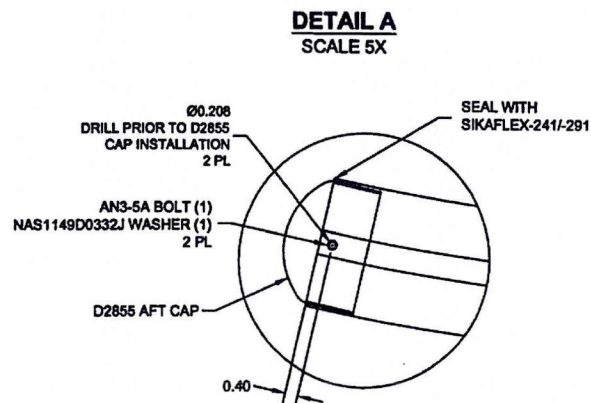
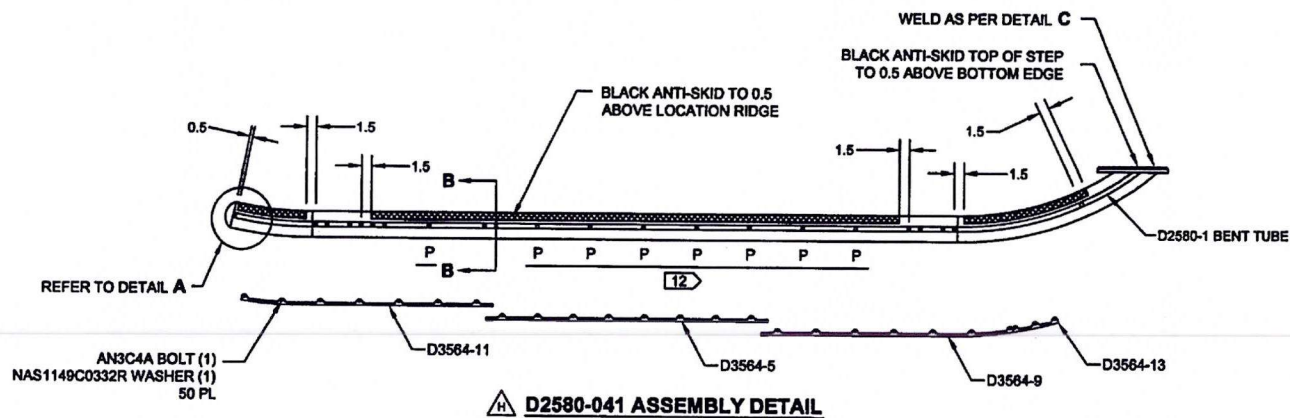
|            |                                                                                                                                                           |     |          |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------|
| H          | SHEET : PL DELETE D3586-1/-5/-13 GASKETS, WEIGHTS UPDATED ACCORDINGLY. SHEETS 2 & 4 PICTORIAL UPDATE FOR REMOVAL OF GASKETS                               | SAD | 17.06.09 |
| G          | ADDED -049, -047 WEIGHT UPDATED PER DSI 9596                                                                                                              | AJS | 14.04.09 |
| F          | INCORPORATE DEO D2580-E-1 PER PAR12-218                                                                                                                   | DC  | 13.06.20 |
| E          | ADD D2580-047 (ZN C4-7) AND D2580-7 (ZN B3-8); INCLUDED DEO D2580-D-1; REFORMATTED DRAWING TO CURRENT STANDARDS; DT8217 & DT8937 WAS TD2577-205 (ZN C4-1) | RF  | 11.06.21 |
| D          | CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/ 9183                                                                                               | PH  | 07.04.06 |
| C          | REDRAWN, INCLUDED DEO 9094/ 9097                                                                                                                          | CP  | 06.06.26 |
| B          | AS MANUFACTURED                                                                                                                                           | DS  | 06.12.02 |
| A          | NEW ISSUE                                                                                                                                                 | DS  | 06.06.16 |
| REV.       | DESCRIPTION                                                                                                                                               | BY  | DATE     |
| DESIGN     | DS                                                                                                                                                        |     |          |
| DRAWN      | SAD                                                                                                                                                       |     |          |
| CHECKED    | <i>[Signature]</i>                                                                                                                                        |     |          |
| MFG. APPR. | <i>[Signature]</i>                                                                                                                                        |     |          |
| APPROVED   | <i>[Signature]</i>                                                                                                                                        |     |          |
| DE APPR.   | <i>[Signature]</i>                                                                                                                                        |     |          |
| DATE       | 17.06.09                                                                                                                                                  |     |          |

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HAWKESBURY, ONTARIO, CANADA

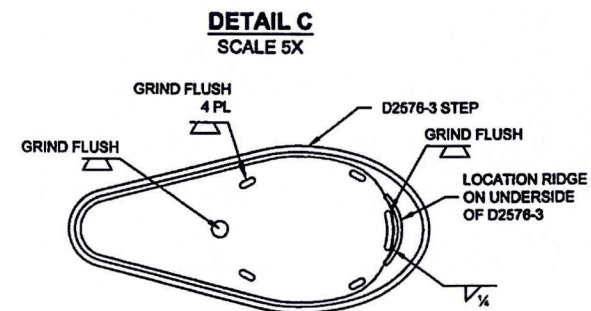
DRAWING NO. D2580  
TITLE 205 SKIDTUBE ASSEMBLY  
REV. H  
SHEET 1 OF 9  
SCALE  
NTS

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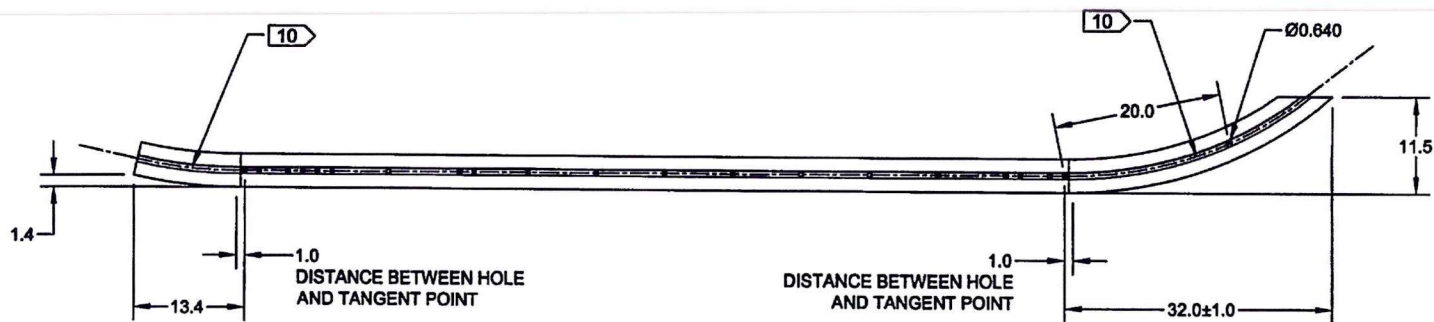
AFTER DRILLING AND BENDING ASSEMBLY  
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:  
1. INSERT D4202-1 SPACER (20 PLACES)  
2. SWAGE TO Ø0.437 X 1.00 DEEP PER QSI 002  
3. TRIM / GRIND FLUSH PER QSI 002



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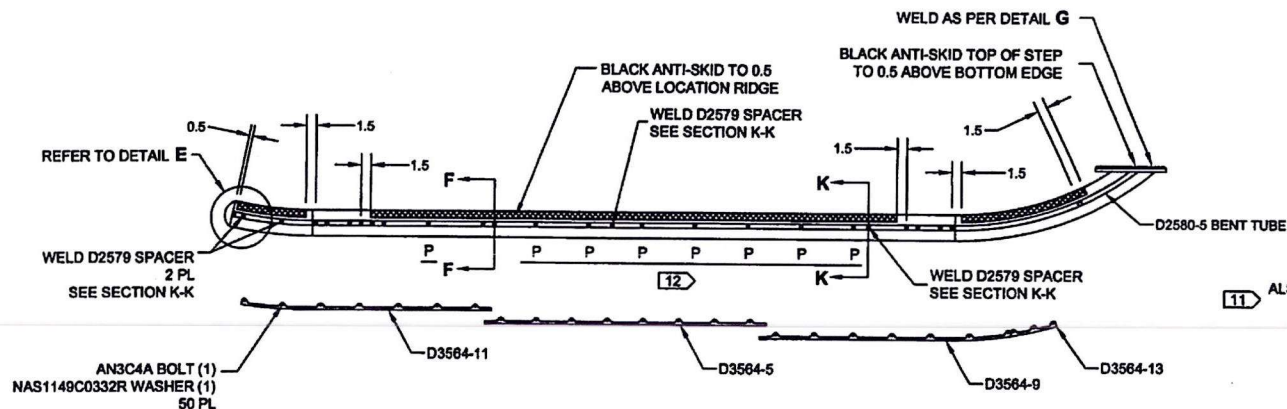
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| DRAWN                                                                                                                                                                                                                          | SAD                | HAWKESBURY, ONTARIO, CANADA            |              |
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| MFG. APPR.                                                                                                                                                                                                                     | <i>[Signature]</i> | D2580                                  | SHEET 2 OF 9 |
| APPROVED                                                                                                                                                                                                                       | <i>[Signature]</i> | TITLE                                  | SCALE        |
| DE APPR.                                                                                                                                                                                                                       | <i>[Signature]</i> | 205 SKIDTUBE ASSEMBLY                  | NTS          |
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**D2580-1 BENT TUBE**  
(MAKE FROM D2580-101 TUBE)

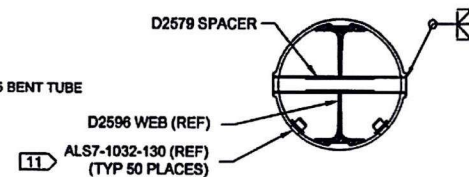
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| MFG. APPR. | <i>[Signature]</i> | TITLE<br>205 SKIDTUBE ASSEMBLY                                                                                                                                                                                                                                                 | SCALE<br>NTS           |
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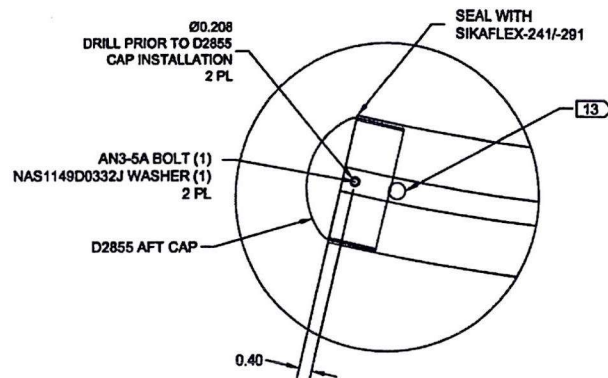
**D2580-045 ASSEMBLY DETAIL**

**SECTION K-K  
SCALE 5X**



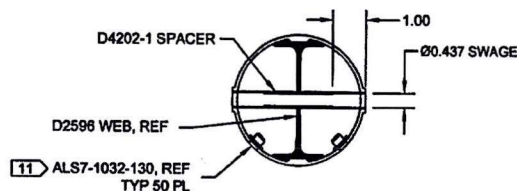
AFTER DRILLING AND BENDING ASSEMBLY  
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:  
1. CHAMFER HOLE 0.050 X 45°  
2. INSERT D2579 SPACER (4 PLACES)  
3. WELD INTO PLACE AND GRIND FLUSH  
4. DO NOT C'BORE

**DETAIL E  
SCALE 5X**



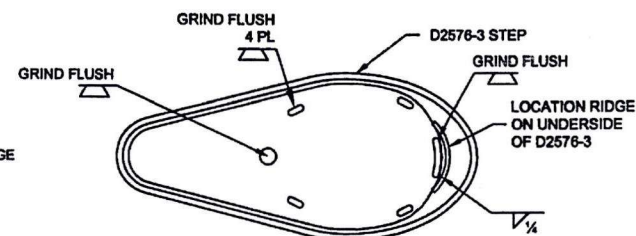
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**SECTION F-F  
SCALE 5X**



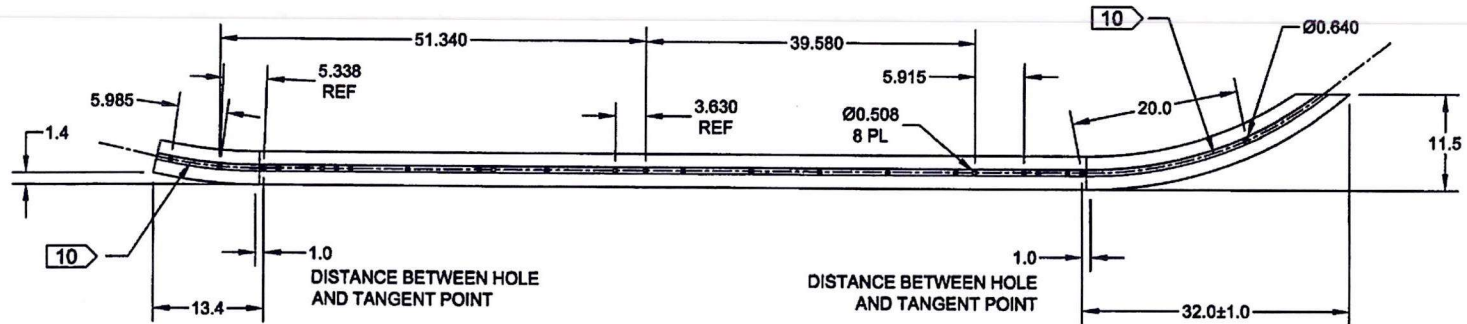
AFTER DRILLING AND BENDING ASSEMBLY  
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:  
1. INSERT D4202-1 SPACER (20 PLACES)  
2. SWAGE TO Ø0.437 X 1.00 DEEP PER QSI 002  
3. TRIM/GRIND FLUSH PER QSI 002

**DETAIL G  
SCALE 5X**



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| MFG. APPR. | <i>[Signature]</i> | TITLE<br>205 SKIDTUBE ASSEMBLY                                                                                                                                                                                                                                                  | SCALE<br>NTS           |
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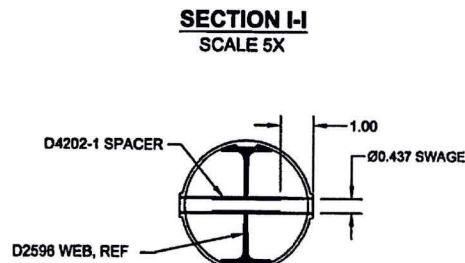
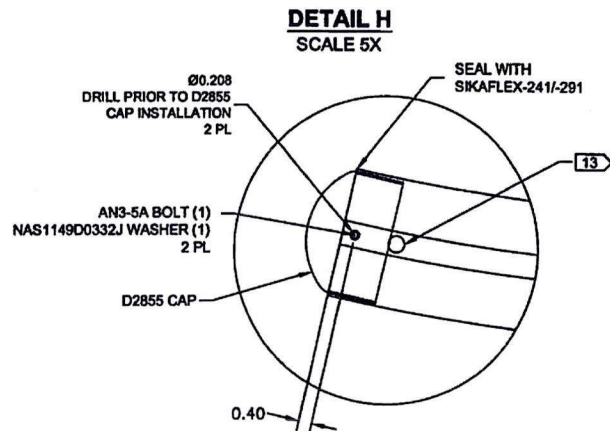
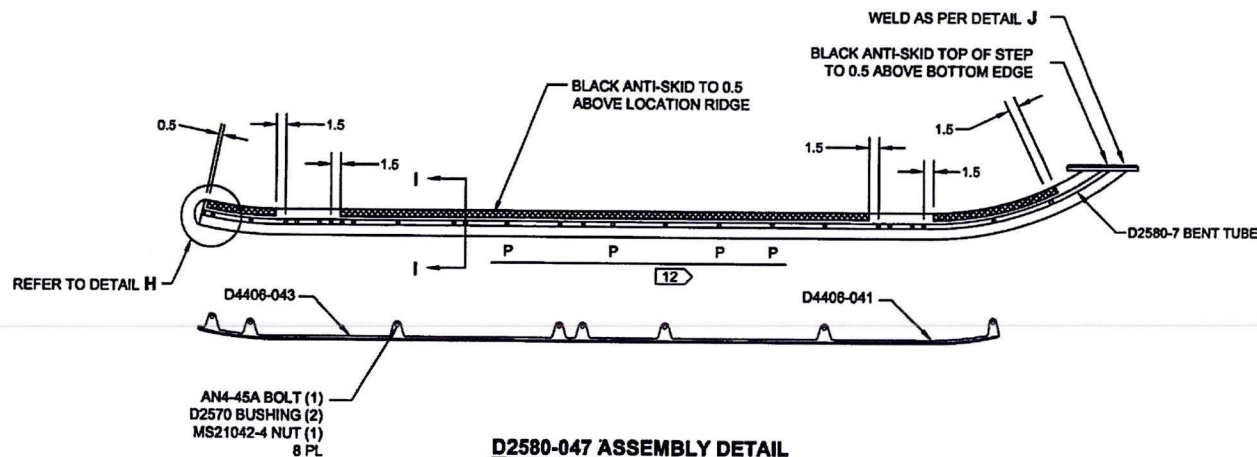


**D2580-5 BENT TUBE**  
(MAKE FROM D2580-101 TUBE)

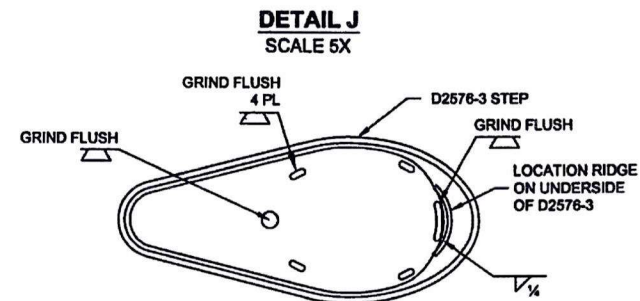
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| MFG. APPR. | <i>[Signature]</i> | TITLE<br>205 SKIDTUBE ASSEMBLY                                                                                                                                                                                                                                         | SCALE<br>NTS           |
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PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:  
1. INSERT D4202-1 SPACER (24 PLACES)  
2. SWAGE TO Ø0.437 X 1.00 DEEP PER QSI 002  
3. TRIM/GRIND FLUSH PER QSI 002

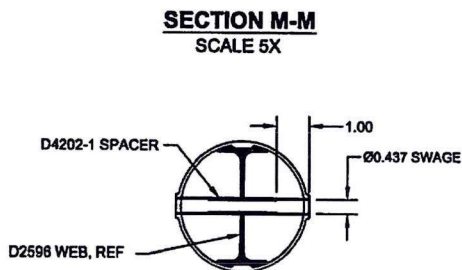
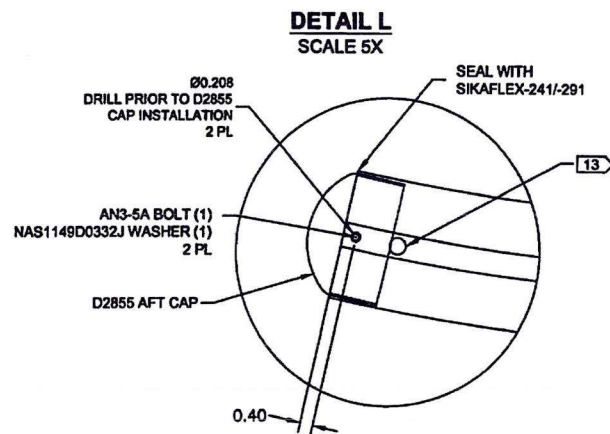
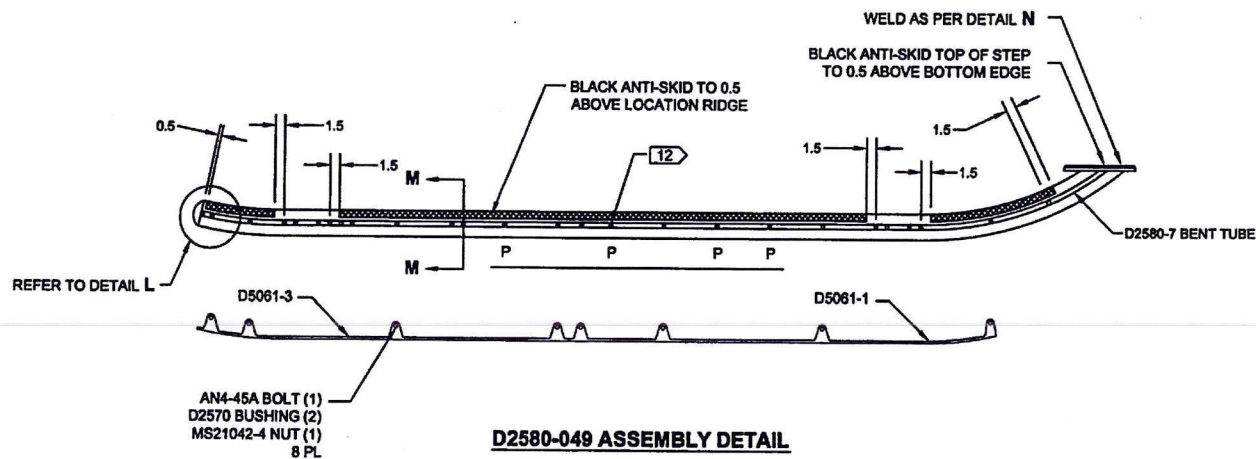


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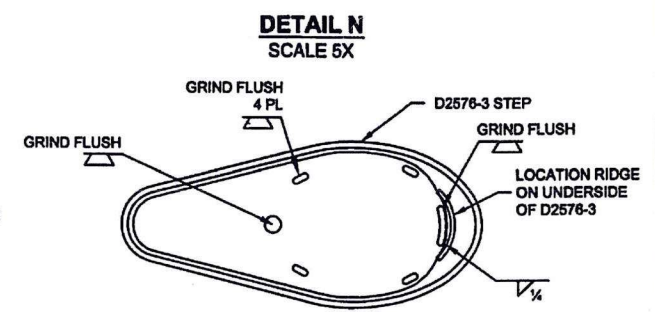
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| MFG. APPR. | <i>[Signature]</i> |                                                                                                                                                                                                                                                                                | SHEET 6 OF 9 |
| APPROVED   | <i>[Signature]</i> | TITLE<br>205 SKIDTUBE ASSEMBLY                                                                                                                                                                                                                                                 | SCALE<br>NTS |
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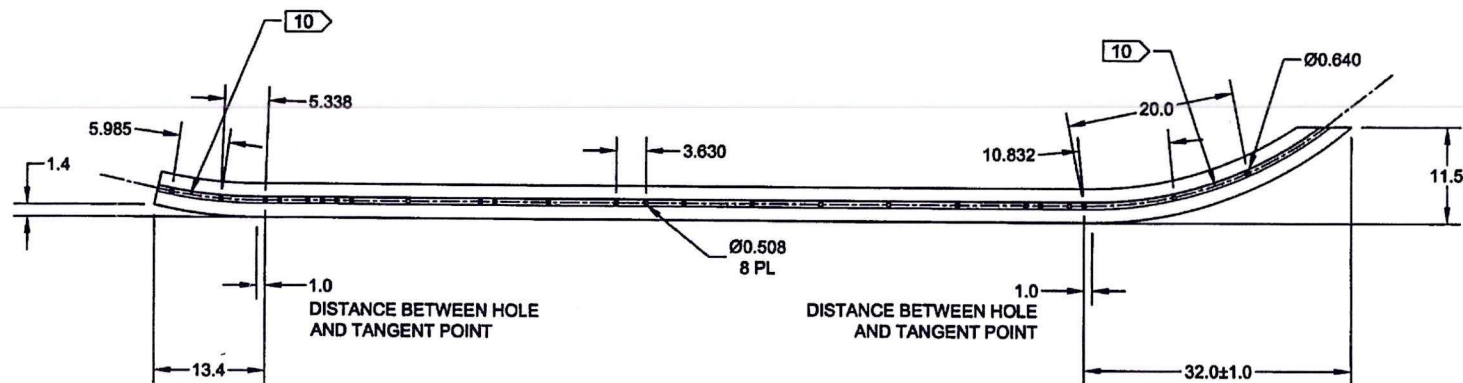


AFTER DRILLING AND BENDING ASSEMBLY  
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:  
1. INSERT D4202-1 SPACER (24 PLACES)  
2. SWAGE TO Ø0.437 X 1.00 DEEP PER QSI 002  
3. TRIM/GRIND FLUSH PER QSI 002



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| MFG. APPR. | <i>[Signature]</i> | TITLE<br>205 SKIDTUBE ASSEMBLY                                                                                                                                                                                                                                          | SCALE<br>NTS           |
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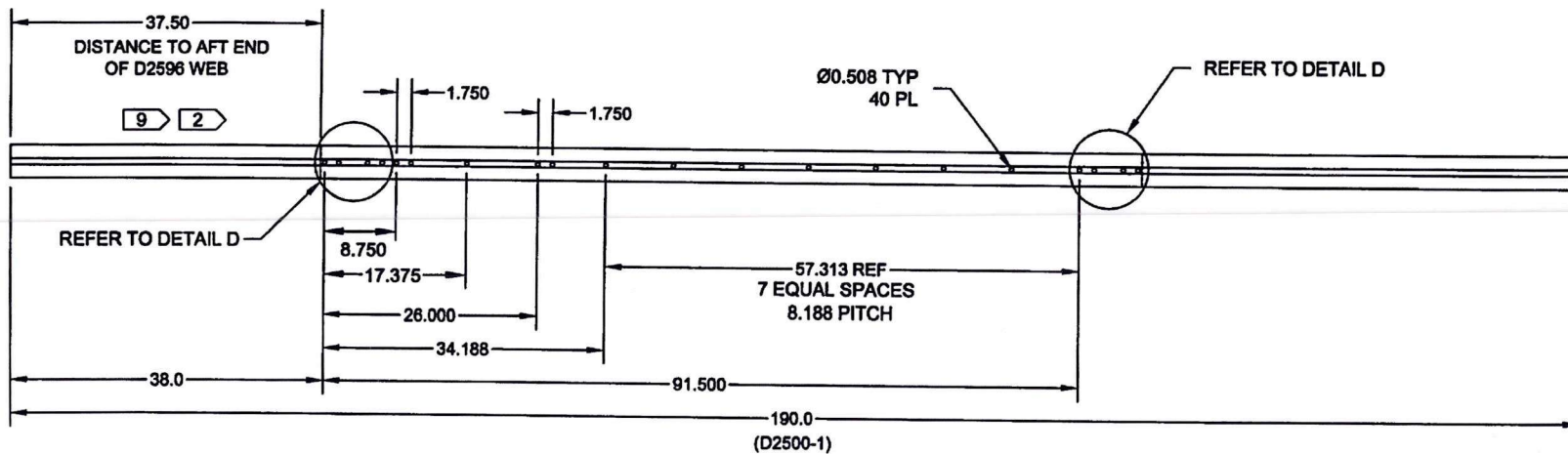


**D2580-7 BENT TUBE**  
(MAKE FROM D2580-101 TUBE)

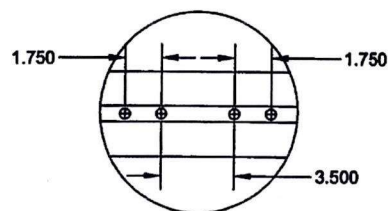
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| DRAWN      | SAD                |                                                                                                                                                                                                                                                                                |                        |
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| MFG. APPR. | <i>[Signature]</i> | TITLE<br>205 SKIDTUBE ASSEMBLY                                                                                                                                                                                                                                                 | SCALE<br>NTS           |
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**D2580-101 TUBE**



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| CHECKED    | <i>[Signature]</i> | DRAWING NO.                                                                                                                                                                                                                                                                                      | REV. H       |
| MFG. APPR. | <i>[Signature]</i> | D2580                                                                                                                                                                                                                                                                                            | SHEET 9 OF 9 |
| APPROVED   | <i>[Signature]</i> | TITLE                                                                                                                                                                                                                                                                                            | SCALE        |
| DE APPR.   | <i>[Signature]</i> | 205 SKIDTUBE ASSEMBLY                                                                                                                                                                                                                                                                            | NTS          |
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